Amendments to the Claims:

1. (Currently amended) A method of reducing a cross-sectional dimension of a nano-opening in a nanostructured device, comprising the steps of:

   a. providing a solid substrate including a nano-opening defined by at least ~~one wall surface~~three wall surfaces fabricated in said substrate, said nano-opening having a given first cross-sectional area of nanometer-scale dimensions bounded by said at least ~~one wall surface~~three wall surfaces, said three wall surfaces forming a substantially rectangular, open nanochannel having a first width and a first depth; ~~and~~

   b. applying a coating material having a defined thickness to said at least ~~one wall surface~~three wall surfaces, thereby causing said nano-opening to have a second cross-sectional area of nanometer-scale dimensions reduced relative to said first cross-sectional area, the dimensions of said second cross-sectional area including a second width reduced by approximately twice said defined thickness; and

   c. enclosing said nanochannel with a cover member.

2. (Canceled)

3. (Currently amended) The method of claim ~~2~~1, ~~including the step of~~wherein said enclosing step comprises enclosing said nanochannel with an uncoated cover member after applying said coating material, said channel having a second depth reduced by approximately said defined

thickness.

4. (Currently amended) The method of claim ~~2~~1 ~~including the step of~~wherein said enclosing step comprises enclosing said nanochannel prior to applying said coating material to provide a fourth wall surface bounding said first cross-sectional area, said nanochannel having a second depth reduced by approximately twice said defined thickness.

5. (Canceled)

6. (Original) A method according to claim 1, wherein said step of applying a coating material having a defined thickness is effected by ion implantation.

7. (Original) A method according to claim 1, wherein said step of applying a coating material having a defined thickness is effected by film deposition.

8. (Currently amended) A method according to claim 1, wherein said step of applying a coating material having a defined thickness coats said at least ~~one wall surface~~three wall surfaces with a metal.

9. (Currently amended) A method according to claim 1, wherein said step of applying a coating material having a defined thickness coats said at least ~~one wall surface~~three wall surfaces with an ionic material.

10. (Currently amended) A method according to claim 1, wherein said step of applying a coating material having a defined thickness coats said at least ~~one wall surface~~three wall surfaces with a molecular film.

11. (Original) A method according to claim 10 where the molecular film is covalently attached the solid substrate.

12. (Original) A method according to claim 10 where the molecular film is non-covalently attached the solid substrate.

13. (Currently amended) A method according to claim 1, wherein said step of applying a coating material having a defined thickness coats said at least ~~one wall surface~~three wall surfaces by chemical conversion of the solid substrate material.

14. (Original) A method according to claim 13, wherein said solid substrate materials is silicon and said chemical conversion is the formation of silicon oxide.

15. (Currently amended) A method according to claim 1, wherein said step of applying a coating material having a defined thickness coats said at least ~~one wall surface~~three wall surfaces with a polymeric material.

16. (Currently amended) A method according to claim 1, wherein said step of applying a coating material having a defined thickness coats said at least ~~one wall surface~~three wall surfaces with at least one polyelectrolyte material.

17. (Currently amended) A method according to claim 16, further including the step of applying to said at least ~~one wall surface~~three wall surfaces a polyelectrolyte material providing at least one additional coating of defined thickness, the charge of the polyelectrolyte

which provides said at least one additional coating being opposite to the charge of the polyelectrolyte to which it is applied.

18. (Currently amended) A method according to claim 1, where the step of applying a coating material having a defined thickness coats said at least ~~one wall surface~~three wall surfaces and modifies the solid-liquid interaction characteristic.

19. (Currently amended) A method according to claim ~~2~~1, wherein said step of providing a solid substrate with an open nanochannel includes the step of providing a substrate having both said open nanochannel and a microchannel having a free space with a third cross-sectional area greater than said first cross-sectional channel area, said microchannel being connected to said nanochannel, said coating step also including coating said microchannel with a coating of said defined thickness to reduce the free space of said microchannel, said thickness being sufficiently small to maintain the cross-sectional area of said microchannel free space larger than the ~~cross-section~~second cross-sectional area of said nanochannel~~ free space~~.

20. (Original) A method according to claim 3, wherein the step of applying a coating material to the open nanochannel is carried out while maintaining the adjacent substrate surface substantially free of said coating material.

21. (Original) A method according to claim 20, wherein said

adjacent substrate surface is maintained substantially free of said coating material, by applying a resist layer to said adjacent substrate surface prior to application of said coating material, and removing said resist layer after application of said coating material.

22. (Original) A method of producing a nanometer-scale conduit in a nanostructured device, comprising the steps of:

providing a solid substrate having an uncovered surface;

forming in said surface an open nanochannel having abottom wall spaced below said uncovered surface and opposed side walls, said nanochannel having a given first cross-sectional channel area of nanometer-scale dimensions defined by the free space between said opposed sidewalls and the depth of said bottom wall below said uncovered surface;

applying a coating material having a defined thickness to said opposed side walls and said bottom wall to reduce the free space between said coated opposed side walls by a factor of two times the defined thickness, and thereby to reduce the free space in said first cross sectional area to provide a flow channel having a flow area with a second cross-sectional area of lesser nanometer-scale dimensions relative to said first cross-sectional channel area; and

applying a planar cover member to said uncovered surface overlying said coated, open flow channel to thereby close the top of said flow channel and form said nanometer-scale conduit.

23. (Original) A method according to claim 22, wherein said

open nanochannel is formed by chemical etching.

24. (Original) A method according to claim 22, wherein said open nanochannel is formed by milling said surface with a finely-focused ion beam to form said open nanochannel.

25. (Original) A nanostructured device for use in transporting a fluid medium having components of differing maximum lateral dimension, said device having a nanometer-scale conduit and comprising a solid substrate having an upper surface, a nanochannel having a bottom wall spaced below said upper surface and opposed side walls, said nanochannel having a given first cross-sectional channel area of nanometer-scale dimensions defined by the free space between said opposed sidewalls and the depth of said bottom wall below said upper surface, a coating material having a defined thickness covering said opposed side walls and said bottom wall, said coating material reducing the free space between said opposed side walls by a factor of approximately two times the defined thickness, and thereby providing a cross-sectional flow area in said nanochannel of reduced nanoscale dimensions relative to said first cross-sectional channel area, and a planar cover member on said upper surface overlying said coated nanochannel, which closes the top of said channel and forms said nanometer-scale conduit.

26. (Original) A nanostructured device according to claim 25, wherein said substrate includes a microchannel having lateral dimensions greater than the differing maximum

lateral dimensions of the fluid medium components to accommodate flow of said fluid medium therethrough, said microchannel communicating with said coated, nanometer-scale conduit, whereby flow from said microchannel into said nanometer-scale conduit is restricted to components of said fluid medium having a maximum lateral dimension smaller than said lateral dimensions of said coated nanometer-scale conduit.

27. (Original) A nanostructured device according claim 26 wherein the rate of transport of said fluid medium components through said nanoscale conduit is dependent on the lateral dimensions of the fluid medium components relative to the lateral dimensions of the nanoscale conduit.

28. (Currently amended) A nanostructured device according to claim ~~25~~26, wherein said fluid medium components include molecules of differing dimensions, said microchannel has a cross-sectional area larger than the molecules in said fluid medium, and the free space dimensions of said nanometer-scale conduit is larger than the dimension of at least one of said molecules and is smaller than the dimension of at least one other of said molecules.

29. (Original) A nanostructured device according to claim 25, wherein said coating comprises a metal film.

30. (Original) A nanostructured device according to claim 25, wherein said coating comprises an ionic material.

31. (Original) A nanostructured device according to claim 25, wherein said coating comprises a molecular film.

32. (Original) A nanostructured device according to claim 25, wherein said coating comprises polymeric material.

33. (Original) A nanostructured device according to claim 25, wherein said coating comprises at least one polyelectrolyte material.

34. (Original) A nanostructured device according to claim 33, wherein said coating comprises a plurality of layers of polyelectrolyte material, each layer being opposite in charge to its adjacent layer.

35. (Currently amended) A nanostructured device according to claim 25, wherein the lateral dimension of said <u>coated</u> nanometer-scale conduit is approximately one nanometer.

36.-52. (Canceled)

53. (Currently amended) A method of making a device for analysis of a biomolecule, said method comprising:

a) providing a solid substrate having a nano-opening defined by at least one wall surface fabricated in said substrate;

b) applying to said wall surface a coating material having at least one property which is effective to promote self-assembly of molecular structures brought into engagement with said coating material; and

c) engaging a molecular structure capable of self-assembly with said coating material<u> under the influence of an electrical force</u>.

54. (Canceled)

55. (Original) The method of claim 53, including the further

step of disengaging said molecular structure from said coating material by reversing the direction of said electrical force.

56. (Original) The method of claim 53, including the further step of preventing engagement of said molecular structure with said coating material by reversing the direction of said electrical force.